



TECHNICAL SERVICE BULLETIN

Temperature monitoring methods

Wine cellars using mechanical refrigeration to regulate temperature are controlled by a temperature probe. There are TWO standard types, liquid sensing, and air sensing.

Liquid sensing probes, commonly known as “bottle probes”, use a bottle, filled most often with water. A probe is submerged into the liquid and the bottle is stored somewhere in the wine cellar. The probe is connected to the system at the thermostat. Information collected from the probe is displayed in the digital readout of the thermostat, and controls the system operations by this temperature. This provides a constant and accurate measurement of the liquid temperature in that bottle.

Air sensing temperature probes are a small, usually metallic and a few inches long. Proper placement is somewhere near the air return portion of the evaporator coil. The probe is connected to the thermostat and from there operates in the same fashion as a “bottle probe”. Temperature is displayed in the digital readout and controls the system operations. This provides an up-to-the-minute measurement of the warmest air in the room.

The most significant difference between the two probe types is the speed of temperature changes displayed. Factory settings for most any refrigeration system will be preset to 55° F. If a serving temperature of 45° F (for white wine & champagne) is desired, USCS will recalibrate the program settings prior to shipment. These program changes can also be done on-sight at the thermostat. NOTE* any wine cellar or cabinet should be sized properly. This should always take into consideration the desired storage temperature or possible changes. If in doubt assume a colder temperature may be used.

The specific heat index of water is much higher than that of air. Because of this, air responds to temperature changes much more quickly than water does. Ultimately, this has very little effect on the wine when either method system is programmed correctly. It is however, very important to understand the difference and to be able to explain it to the end user.

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The two types of systems each use a temperature differential in the settings to account for this difference. This is a range the system operates in to achieve an average predetermined temperature, most often 57° F. The differential for an air probe will be a few degrees while the differential for a liquid probe is less than one degree. On a display for an air probe the temperature will swing between 55° F- 59° F. The same target temperature for a display using a liquid probe will show a variant between 55.0° F - 55.5. With either method, the liquid temperature of bottles stored in the wine cellar will change by less than ½ of one degree.

USCS uses air temperature probes only. There is an added advantage of efficiency to monitoring by air temperature. The system can recover changes in temperature more quickly. It will likely run more frequently, but not have to run as long to compensate for changes. With cycling on and off more often, the humidity level tends to be more consistent and most importantly, the wine is kept very stable.

Educating your customer on the operational differences of air probes and bottle probes is important. A wine cellar is a significant investment to any property. When selecting a cooling system, all aspects should be considered and not just a preference of the temperature monitoring system.